

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 12970WO/01	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IL 03/01086	International filing date (<i>day/month/year</i>) 18.12.2003	Priority date (<i>day/month/year</i>) 19.12.2002
International Patent Classification (IPC) or both national classification and IPC F42B12/36		
Applicant RAFAEL-ARMAMENT DEVELOPMENT AUTHORITY LTD. ET AL.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 12.07.2004	Date of completion of this report 29.03.2005
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Gex-Collet, A-L Telephone No. +31 70 340-4951 

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International application No. PCT/L 03/01086

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-24 as originally filed

Claims, Numbers

1-19 filed with telefax on 16.02.2005

Drawings, Sheets

1/8-8/8 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-19
	No: Claims	
Inventive step (IS)	Yes: Claims	1-19
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-6 056 237 (WOODLAND RICHARD L K) 2 May 2000

The document D1 (col. 3, l. 60 - col.4, l. 7; col. 7, l. 15-38; col. 11, l. 19-30; col. 13, l. 33-41; col. 14, l. 31-58; fig. 1, 2, 7, 21, 26-31) is regarded as being the closest prior art to the subject-matter of independent claim 1, and shows (the references in parentheses applying to this document):

A reconnaissance system comprising:

- A projectile (10), having an opening (12) through which images of a target area can be acquired;
- image acquiring means (13) for acquiring images of said target area through said opening (12)
- A transmitter (15) for transmitting during its flight said images to a remote station (6.0);
- Means for stabilising (121, 71, 74) said projectile (10) and/or said image acquiring means (13) while flying;
- A remote station (6.0), for receiving and displaying said images transmitted from the projectile, and a monitor (139) comprising a display for displaying the received images.

The subject-matter of independent claim 1 differs from this known reconnaissance system in that the launcher is capable of being coupled to a rifle and the projectile is flying in a ballistic trajectory above the target area.

The subject-matter of independent claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as to provide a portable reconnaissance system capable of being readily integrated in a soldiers standard personal equipment.

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The solution to this problem proposed in independent claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The available prior art neither discloses nor suggests the integration of a reconnaissance platform in a projectile capable of being fired from a launcher coupled to a personal rifle.

Claims 2-19 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

CLAIMS**1. A reconnaissance system, comprising:**

- A projectile having an opening through which images of a target area can be acquired;
- A portable launcher capable of being coupled to a rifle, for launching said projectile to fly along and above said target area;
- Image acquiring means within the projectile for acquiring images of the target area through said opening;
- A transmitter within the projectile for transmitting during its flight said acquired images to a remote station;
- Means for stabilizing said projectile and/or said image acquiring means while flying in a ballistic trajectory above the target area; and
- A remote station, which comprises a receiver for receiving the said images transmitted from the projectile, and a monitor comprising a display for displaying the received images.

2. A system according to claim 1, wherein said stabilizing means are vanes mounted on the rear side of said projectile.

3. A system according to claim 1, wherein said stabilizing means are gyroscopic means that determines the orientation of said image acquiring means with respect to the projectile and the target area.

4. A system according to claim 1, wherein the image acquiring means is chosen from among optical camera, infrared camera, CCD and CMOS.

5. A system according to claim 1, wherein the projectile transmitter comprises an antenna printed on the outer surface of the projectile, thereby maintaining an aerodynamic outline of said projectile.

6. A system according to claim 1, wherein the projectile is pushed by a cartridge containing a charge in quantity that corresponds to the ballistic properties of said projectile and the distance from the launching point to the target.

7. A system according to claim 1, wherein the launcher launches the projectile while being coupled to a rifle.

8. A system according to claim 1, wherein the launcher launches the projectile while being detached from a rifle and independent thereof.

9. A system according to claim 1, wherein the remote station is a portable computing device.

10. A system according to claim 9, wherein the computing device is selected from laptop computers, PDAs and Pocket PCs.

11. A system according to claim 1, wherein the image acquiring means comprise two separate and distanced lenses whereby to generate three-dimensional images.

12. A system according to claim 1, wherein the means for stabilizing the projectile comprise retractable fins.

13. A system according to claim 1, wherein the transmitter transmits the images to one or more remote stations.

14. A system according to claim 13, wherein the images are transmitted together with a selection code that enables their reception only by predetermined stations.

15. A system according to any one of claims 1 to 14, comprising in addition to the image acquiring means – or instead of such image acquiring means – one or more sensor(s) suitable to detect the presence or the absence of a sensible condition, and means for generating a signal representative of the sensed conditions and for transmitting a signal corresponding to them to a user's receiver.

16. A system according to claim 15, wherein the sensed condition is the presence or absence of a chemical agent.

17. A system according to claim 15, wherein the sensed condition is the presence or absence of a biological agent.

18. System according to claim 1, wherein the launcher is a standard grenade launcher.

19. System according to claim 18, wherein the rifle is an M 16, and the launcher is an M 203 grenade launcher.